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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,814	11/26/2003	Cha Deok Dong	29936/39765	9355
4743	7590 12/21/2005		EXAM	INER
	L, GERSTEIN & BOF	DEO, DUY VU NGUYEN		
233 S. WACKER DRIVE, SUITE 6300 SEARS TOWER CHICAGO, IL 60606			ART UNIT	PAPER NUMBER
			1765	

DATE MAILED: 12/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)		
	10/722,814	DONG ET AL.		
Office Action Summary	Examiner	Art Unit		
	DuyVu n. Deo	1765		
The MAILING DATE of this communication ap Period for Reply	pears on the cover sheet with the o	correspondence address		
A SHORTENED STATUTORY PERIOD FOR REPL WHICHEVER IS LONGER; FROM THE MAILING D  - Extensions of time may be available under the provisions of 37 CFR 1. after SIX (6) MONTHS from the mailing date of this communication.  - If NO period for reply is specified above, the maximum statutory period  - Failure to reply within the set or extended period for reply will, by statute Any reply received by the Office later than three months after the mailin earned patent term adjustment. See 37 CFR 1.704(b).	PATE OF THIS COMMUNICATION 136(a). In no event, however, may a reply be tir will apply and will expire SIX (6) MONTHS from e, cause the application to become ABANDONE	N. nely filed the mailing date of this communication. ED (35 U.S.C. § 133).		
Status				
<ol> <li>Responsive to communication(s) filed on <u>06 C</u></li> <li>This action is <b>FINAL</b>.</li> <li>Since this application is in condition for alloward closed in accordance with the practice under the practice un</li></ol>	s action is non-final. ince except for formal matters, pro			
Disposition of Claims				
4) ☐ Claim(s) 1-3 and 5-8 is/are pending in the app 4a) Of the above claim(s) is/are withdra 5) ☐ Claim(s) is/are allowed. 6) ☐ Claim(s) 1-3 and 5-8 is/are rejected. 7) ☐ Claim(s) is/are objected to. 8) ☐ Claim(s) are subject to restriction and/o	own from consideration.  Or election requirement.			
9) The specification is objected to by the Examine 10) The drawing(s) filed on is/are: a) acc Applicant may not request that any objection to the Replacement drawing sheet(s) including the correct 11) The oath or declaration is objected to by the Example 11.	cepted or b) objected to by the drawing(s) be held in abeyance. Section is required if the drawing(s) is ob	e 37 CFR 1.85(a). jected to. See 37 CFR 1.121(d).		
Priority under 35 U.S.C. § 119				
<ul> <li>12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).</li> <li>a) All b) Some * c) None of:</li> <li>1. Certified copies of the priority documents have been received.</li> <li>2. Certified copies of the priority documents have been received in Application No</li> <li>3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).</li> <li>* See the attached detailed Office action for a list of the certified copies not received.</li> </ul>				
Attachment(s)	4) 🔲 Interview Summary			
<ol> <li>Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)</li> <li>Paper No(s)/Mail Date</li> </ol>	Paper No(s)/Mail Day 5) Notice of Informal P 6) Other:	ate Patent Application (PTO-152)		

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### **DETAILED ACTION**

## Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 2. Claims 1-5, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Change et al. (US 6,380,029) and Dong et al. (US 2002/0068398).

At this time, the term "sequentially" will be interpreted as one after the other, but not necessarily to be in any order. Therefore, the polysilicon and metal silicide can be in any order.

Chang describes a method for forming a gate electrode comprising: forming a WSi 50 under a polysilicon 52 on a substrate (col. 7, line 56-60; col. 8, line 21-22) (this would read on claimed sequentially); performing an RTA on the WSi at 900 degrees Celsius for about 20 s in a nitrogen atmosphere (col. 7, line 65-col. 8, line 2) (this would crystallize the WSi); forming a gate electrode by etching the WSi and the polysilicon using Cl2/O2 (col. 8, line 53-55) (claimed single etching). Unlike claimed invention, Chang is silent about the physical characteristic of the WSi, which is its stochiometric ratio of (SiH2 or SiH2Cl2):WF6 of 2.0 to 2.8. Dong teaches a method for forming WSi wherein he teaches forming the WSi at a stochiometric ratio of (SiH2 or SiH2Cl2):WF6 of 2.3 to 2.8 (paragraph [0019]). At the time of the invention, one skilled in the art would find it obvious to form the WSi in further review of Dong's method because Dong

teaches another necessary characteristic of the WSi that would facilitate the depositing of the WSi with a reasonable expectation of success.

Referring to claim 8, the RTA would results in the etch rate of the crystallized WSi being similar to that of the polysilicon film because the same process and processing parameters are being performed on the WSi.

3. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang and Dong as applied to claim 1 above, and further in view of Xu et al. (US 6,544,896).

Referring to claims 6 and 7, even though Chang doesn't describe the etching process is performed in an inductively couple plasma chamber. However, using any plasma chamber that is known to one skilled in the art, such as an inductively couple plasma chamber as shown here by Xu (col. 1, line 30-35; col. 4, line 20-37), at the time of the invention would be obvious in order to provide plasma for the etching of the WSi and polysilicon with a reasonable expectation of success.

### Response to Arguments

4. Applicant's arguments with respect to claims 1-3, 5-8 have been considered but are moot in view of the new ground(s) of rejection.

#### Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DuyVu n. Deo whose telephone number is 571-272-1462. The examiner can normally be reached on 6:00-2:30 Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Primary Examiner Duy-Vu N. Deo 12/14/05

kd